

Appl. No. 10/624,471

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CENTRAL FAX CENTER****NOV 22 2006****REMARKS/ARGUMENTS****Amendments to Specification**

Minor editorial corrections have been made in the specification by replacing the paragraph starting on p. 23, line 3.

Status of Claims

Claims 1-37 remain in the application.

35 U.S.C 103 Claim Rejections

The requirements for establishing a prima facie case of obviousness as set out in the MPEP Section 2143.01 require that references when combined teach all of the claimed limitations, that there be a reasonable expectation of success in realizing the claimed invention, and that there be a motivation to combine the references.

The Examiner has rejected claims 1 to 4, 20, 21 and 24 to 37 under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Publication No. 20020176482 (Chien) in view of U.S. Patent Publication No. 20020131101 (Ohira).

With respect to claim 1, the Examiner alleges that Chien discloses a method of determining the viability of a signal path through the network. In the abstract of the Chien reference, it is disclosed that the application is directed to calculating a preferred configuration of signal processing to best manage the available energy for estimated channel characteristics (emphasis added).

The Examiner alleges that Chien discloses "identifying at least one optical effect that impacts the viability of the signal path". As the subject matter of Chien does not deal with an optical transmission system, but instead with a radio system, Chien clearly does not identify "at least one optical effect". Even if one were to consider the step to be synonymous with identifying at least one transmission effect for example, Applicant submits that the Examiner has still not identified an equivalent limitation in Chien. The Examiner suggests that SNR or BER are equivalent to "an optical effect". Applicant submits that SNR and BER are not effects, but

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are system parameters that change in response to an effect. On page 7, lines 21-23 of the present application examples of optical effects are identified as “dispersion, self-phase modulation, cross-phase modulation and four-wave mixing”. Furthermore, on page 8, lines 1-6, the present application states “The resulting metrics are applied iteratively, from segment to segment, in order to generate an overall figure of merit for a particular network configuration. The figure of merit may be BER, OSNR, Q, or the sum of “penalty points” charged to a segment based on the results of the application of the equations”. Chien does not disclose “identifying at least one optical effect that impacts the viability of the signal path”.

The Examiner alleges that Chien discloses “identifying at least one base variable upon which the identified optical effects depend”. The present application describes examples of base variables on page 7, line 29 to page 8, line 1 as “relations governing such (optical) effects are identified as functions of fiber type and length, number of wavelengths and input power”. The Examiner alleges that “base values” are equivalent to noise process and amplitude as found in the equation in paragraph 0072. While these are variables that SINR in particular is dependent upon, as discussed above SINR, BER and SNR are not “effects” that impact the viability of the signal path. Therefore, Chien does not disclose “identifying at least one base variable upon which the identified optical effects depend”.

The Examiner alleges that Chien discloses “approximating each identified optical effect as a function of each identified base variable”. As Chien does not disclose the steps of “identifying at least one effect” or “identifying at least one base variable upon which the identified optical effects depend”, Chien does not disclose the step of “approximating each identified optical effect as a function of each identified base variable”.

The Examiner alleges that Chien discloses “assigning a performance value to the signal at its introduction into the network” in the form of the adjustable threshold parameters V1-V18 described in Table 1. The threshold parameters V1-V18 are used by Chien as constraints for providing control adjustments to determine a preferred configuration of signal processing (page 3, paragraph 0060). Chien discloses that “thresholds V1 through V18 are adjustable parameters depending on the reconfigurable blocks used. Generally, V3-V6 are selected to be in a region in which BER performance meets the operational requirement at a given time”. Chien is

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using the threshold parameters as a guide for initiating steps to optimize the signal processing configuration based on estimated values of SIR and SNR. Chien is not assigning a particular value of V1-V18, but is assigning the adjustable range of V1-V18 and then determining where an estimated SIR or SNR lies within the range. In the present application, as described above a figure of merit such as BER, OSNR, Q, is assigned as a performance value to the signal at its introduction to the network. In subsequent steps of claim 1 it is recited that this figure of merit is recalculated for each segment of the path and after the last segment of the path, is compared to a threshold value of the figure of merit to determine if the path is viable. The feature that Chien discloses, i.e. assigning an adjustable range of V1-V18, is not the same as "assigning a performance value to the signal at its introduction into the network".

The Examiner alleges that Chien discloses "recalculating the impact of each identified optical effect on the performance value as the signal passes through the segment". The Examiner equates this limitation as recited in claim 1 with "looping back via return path 64" in Figure 2 of Chien. As Chien does not disclose initially calculating the impact of each identified optical effect on a performance value as a signal passes through a segment, Chien cannot disclose recalculating the impact of each identified optical path. Furthermore, the "looping back" that the Examiner is referring to is actually disclosed as "From time to time, the estimate is refreshed and the method repeats, looping back via return path 64". Chien is performing the optimization of a signal processing configuration for a same link with an updated SIR/SNR estimate. The present application is repeating the previous three steps for each additional optical effect at a given time, not repeating steps for a same estimated value from time to time. Chien does not disclose "recalculating the impact of each identified optical effect on the performance value as the signal passes through the segment".

The Examiner alleges that Chien discloses "comparing the resulting performance of the signal after passage along the signal path against an acceptable threshold to determine the path's viability". The Examiner equates this limitation to the control adjustments in Table 1 associated with the threshold values V1-V18. Chien does not calculate resulting performance in the manner recited in the previous steps of claim 1 as described above. Also, Chien is using the range of threshold parameters V1-V18 to provide guidance for optimizing signal processing configuration

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for a given path, not to determine viable paths. Therefore, Chien does not disclose "comparing the resulting performance of the signal after passage along the signal path against an acceptable threshold to determine the path's viability".

The Examiner concedes that Chien does not disclose a network comprising a plurality of nodes interconnected by optical fiber segments and the step of recalculating for each successive segment in the signal path. However, the Examiner alleges that Ohira does disclose these features.

At page 2, paragraph 0032, Ohira discloses "The monitoring information 50 received by the monitoring information input module 11 should contain at least the information needed to execute specified monitoring processes for the optical transmission device 100 which serves as the starting point for monitoring and the optical transmission device 100 which serves as the end point for monitoring. In order to identify the monitoring interval, the starting point for monitoring, the end point for monitoring, and the monitoring path are needed. Thus, the monitoring information 50 must contain the starting point for monitoring, the end point for monitoring, and a monitoring zone information to identify a monitoring path". Ohira does not perform monitoring, i.e. additional recalculation steps, for individual segments of a multiple segment path in a specified end-to-end path. Monitoring is done at the starting point and the end point.

Chien and Ohira do not include all the limitations of independent claim 1, either alone or in combination. The Examiner has failed to satisfy the first criterion for establishing a *prima facie* case of obviousness, namely that the references when combined teach all of the claimed limitations.

Applicant submits that there would be no reasonable expectation of success in a combination of subject matter of the two references. Chien does not disclose all the limitations relied upon by the Examiner to be disclosed by Chien. Neither does Ohira teach the limitations relied upon by the Examiner to be disclosed by Chien, or all of the limitations relied upon by the Examiner to be disclosed by Ohira itself. Without all the limitations of claim 1 being disclosed by the two references, either alone or in combination, it is not reasonable to expect to achieve the invention in the manner recited. Therefore, the Examiner has failed to satisfy the second

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criterion for establishing a *prima facie* case of obviousness, namely that there is a reasonable expectation of success in a combination of subject matter of the two references.

The respective prior art does not suggest, either alone or in combination the desirability of the claimed invention. Applicant submits that neither of the two references suggests the subject matter of the other reference in a manner that would lead one skilled in the art to combine the references to arrive at the claimed invention. For at least these reasons and also that neither of the references, either alone or in combination teach all the limitations of the claim, Applicant submits that one skilled in the art would not be motivated to look to these two references when addressing the problem addressed by the present invention.

Furthermore, the two references are from two different technological fields, as evidenced from the International and U.S. classifications. Applicant submits that it would not necessarily be expected that someone skilled in the art of one of the technological fields would be knowledgeable with the other technological field in such a manner that they would be motivated to combine the references.

For at least these reasons, Applicant submits that there is a lack of motivation to combine the cited references in the manner suggested by the Examiner. Therefore, the Examiner has failed to satisfy the third criterion for establishing a *prima facie* case of obviousness, namely that there is a motivation to combine the references.

Furthermore, Applicant submits that using Chien in combination with Ohira would change the principle of the operation of the system described in Chien. Chien is directed to a method for reconfiguring signal processing parameters in wireless radio communications. Ohira is a system for network administration of optical communications. These two types of communication have different principles of operation. Furthermore, Chien is directed to optimizing a single link, not multiple links in an overall communication path, whereas Ohira is directed to an optical system having a signal path with multiple segments. For at least these reasons, Applicant submits that combining Chien and Ohira in a manner suggested by the Examiner would change the principle of operation of Chien. As the principle of operation of Chien would be changed, the teaching of the references is not sufficient to render the claims *prima facie* obvious.

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As the Examiner has failed to satisfy the necessary criteria for establishing a *prima facie* case of obviousness with respect to claim 1, for at least the reasons discussed above, Applicant submits that claim 1 patentably distinguishes over the cited references of Chien and Ohira, either alone or in combination. It is respectfully requested that the Examiner reconsider and withdraw the obviousness rejection to claim 1.

Claims 2 to 4, 20 and 21 are dependent upon claim 1. As claim 1 is allowable for the reasons discussed above, claims 2 to 4, 20 and 21 are likewise allowable.

Claim 24 recites similar subject matter to claim 1 in the form of a node with physical components. For at least the reasons discussed above with regard to claim 1, Applicant submits that claim 24 patentably distinguishes over the combination of Chien and Ohira, either alone or in combination.

Furthermore, the Examiner equates the functionality of each of a quantifier, an approximator, a calculator and a comparator, as recited in claim 24 with "22 in figure 1, channel monitor". Applicant submits that the channel monitor is used to estimate channel characteristics, it does not include the functionality of each of the quantifier, the approximator, the calculator and the comparator as recited in claim 24. Chien discloses in paragraph 0011 on page 1 "An apparatus in accordance with the invention includes: a channel monitor which produces estimates of the communication channel's characteristics; a programmable processor arranged to receive estimates from said channel monitor, and programmed to compute preferred signal processing configuration based upon said estimates; at least one reconfigurable digital signal processing module, arranged to receive commands from said programmable processor and to reconfigure in response to said commands; and a radio transceiver, with inputs from said reconfigurable signal processing module and outputs to said reconfigurable signal processor module, for sending and receiving radio signals". Clearly, the channel monitor cannot be equated with all of the physical components recited in claim 24.

Ohira does not disclose features that are alleged to be disclosed by Chien, but are not disclosed by Chien. Therefore, Chien and Ohira do not disclose all the limitations as required to establish a *prima facie* case of obviousness.

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In addition, Applicant submits that the reasons discussed above with regard to claim 1 pertaining to the lack of motivation for combining the cited references similarly applies to the Examiner's rejection of claim 24. Therefore, there is no motivation to combine the two references as required to establish a *prima facie* case of obviousness.

For at least the reasons discussed above, Applicant submits that the Examiner has not satisfied all the necessary requirements for establishing a *prima facie* case of obviousness. Applicant respectfully requests that the Examiner reconsider and withdraw the obviousness rejection of claim 24.

Claim 25 is dependent upon claim 24. As claim 24 is allowable for the reasons discussed above, claim 25 is likewise allowable.

Claim 26 recites similar subject matter to claim 1 in the form of a transmitter node with physical components. For at least the reasons discussed above with regard to claim 1, Applicant submits that claim 26 patentably distinguishes over the combination of Chien and Ohira, either alone or in combination.

Claim 26 includes similar structural components to claim 24, along with the addition of a "calculator to determine the impact of each identified optical effect on the performance of a signal passing through at least one downstream segment". For reasons similar to those discussed with regard to claim 24, Applicant submits that the Examiner has not satisfied all the necessary requirements for establishing a *prima facie* case of obviousness. Applicant respectfully requests that the Examiner reconsider and withdraw the obviousness rejection of claim 26.

Claim 27 is dependent upon claim 26. As claim 26 is allowable for the reasons discussed above, claim 27 is likewise allowable.

Claim 28 recites similar subject matter to claim 1 in the form of an intermediate node with physical components. For at least the reasons discussed above with regard to claim 1, Applicant submits that claim 28 patentably distinguishes over the combination of Chien and Ohira, either alone or in combination.

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Claim 28 includes similar structural components to claim 26, along with the addition of a "receiver for receiving a previous performance value from the at least one upstream node along the segment interconnecting the two nodes". For reasons similar to those discussed with regard to claim 24 and 26, Applicant submits that the Examiner has not satisfied all the necessary requirements for establishing a *prima facie* case of obviousness. Applicant respectfully requests that the Examiner reconsider and withdraw the obviousness rejection of claim 28.

Claims 29 and 30 are dependent upon claim 28. As claim 28 is allowable for the reasons discussed above, claims 29 and 30 are likewise allowable.

Claim 31 recites "In a communications network comprising a plurality of nodes interconnected by segments of optical fiber, a receiver node interconnected with at least one upstream node by an upstream segment from along which it is adapted to receive signals, comprising: a receiver for receiving a performance value from an upstream node along the segment interconnecting the two nodes; and a comparator to determine if the performance of the signal at the end of the signal path satisfies an acceptable threshold".

The Examiner alleges that Chien discloses a comparator "for receiving a performance value". Claim 31 does not recite a comparator "for receiving a performance value". It is assumed that the Examiner intended to allege that Chien discloses "a comparator to determine if the performance of the signal at the end of the signal path satisfies an acceptable threshold". The Examiner equates this feature with "22 in figure 1, channel monitor, performs the operations of table 1". Applicant submits that the channel monitor is used to estimate channel characteristics, it is not a comparator to determine if signal performance satisfies an acceptable threshold.

The Examiner concedes that Chien does not disclose a plurality of nodes interconnected by segments of optical fiber, a receiver node interconnected with at least one upstream node by an upstream segment from along which it is adapted to receive signals, comprising: a receiver for receiving a performance value from an upstream node along the segment interconnecting the two nodes. However the Examiner alleges that Ohira discloses these features.

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Ohira does not disclose features that are alleged to be disclosed by Chien, but are not disclosed by Chien. Therefore, Chien and Ohira do not disclose all the limitations as required to establish a *prima facie* case of obviousness.

Applicant submits that the reasons discussed above with regard to claim 1 pertaining to the lack of motivation for combining the cited references similarly applies to the Examiner's rejection of claim 31. Therefore, there is no motivation to combine the two references as required to establish a *prima facie* case of obviousness.

For at least these reasons, Applicant submits that the Examiner has not satisfied all the necessary requirements for establishing a *prima facie* case of obviousness. Applicant respectfully requests that the Examiner reconsider and withdraw the obviousness rejection of claim 31.

Claims 32 and 33 are dependent upon claim 31. As claim 31 is allowable for the reasons discussed above, claims 32 and 33 are likewise allowable.

Claims 34, 35, 36 and 37 recite similar subject matter to claims 24, 26, 28 and 31 respectively, each in the form of a computer readable medium for storing instructions for operation of a type of node recited in the respective claim. For at least the reasons discussed above with regard to claims 24, 26, 28 and 31, Applicant submits that claims 34, 35, 36 and 37 patentably distinguish over the combination of Chien and Ohira, either alone or in combination. Applicant respectfully requests that the Examiner reconsider and withdraw the obviousness rejections of claims 34, 35, 36 and 37.

The Examiner has rejected claims 5 to 19, 22 and 23 under 35 U.S.C. 103(a) as being unpatentable over Chien in view of Ohira and further in view of other selected references, namely U.S. Patent Publication No. 20030031440 (Dennis), U.S. Patent Publication No. 20020196507 (Stuart), U.S. Patent No. 4,738,503 (Desurvire) and U.S. Patent No. 5,729,372 (Terahara).

Claims 5 to 19, 22 and 23 are dependent upon claim 1, either directly or indirectly. Applicant submits that none of the additional references disclose limitations that are lacking in

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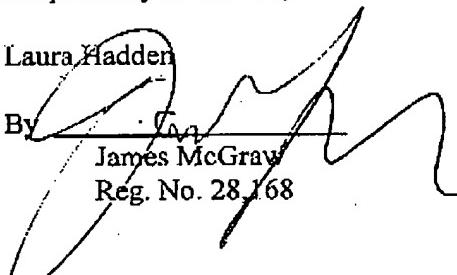
Chien and Ohira, but that are relied upon by the Examiner to be disclosed by these two references.

For at least the same reasons discussed above for claim 1, and the fact that the additional references do not disclose limitations not disclosed by Chien and Ohira, Applicant submits that claims 5 to 19, 22 and 23 each patentably distinguish over the combination of Chien, Ohira and the respectively cited reference. Applicant respectfully requests that the Examiner reconsider and withdraw the rejection.

In view of the foregoing, early favorable consideration of this application is earnestly solicited.

Respectfully submitted,

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